Multiplying and Dividing with Scientific Notation

Notes	Video Links & Practice Space
Vocabulary 1. **Associative property of multiplication:** numbers can be grouped in different ways and the _____ will be the same. (a x b) x c = a x (b x c) 2. **Commutative property of multiplication:** number can be multiplied in any _____ and the product will be the same. (a x b) = (b x a) 3. **Scientific notation:** a method of writing very large or very small numbers using _____ in which a number is expressed as the product of a power of 10 and a number that is between 1 and 10.	**Vocabulary (0:56)**
Multiplying Numbers in Scientific Notation **Step 1:** Rewrite the expression by grouping the first factors together and the second factors together using the commutative and associative properties of multiplication. **Step 2:** Multiply the first factors. Then multiply the second factors using the Product of Powers Law. **Step 3:** Rewrite the final answer in scientific notation, if necessary.	**Multiplying Numbers in Scientific Notation (2:06)** **Example**: (5×10^{7}) x (6×10^{9})

Practice

1. $(1.45\ x\ 10^{-15})\ x\ (4.35\ x\ 10^{-11})$

2. $(6.92\ x\ 10^{4})\ x\ (3.97\ x\ 10^{-22})$

3. Find the product of (5.8×10^{-6}) and (2×10^{3})

4. $(0.8 \times 10^{2})(1.28 \times 10^{7})$

Practice Multiplying Numbers in Scientific Notation (5:44)

Dividing Numbers in Scientific Notation

Step 1: Rewrite the expression by grouping the factors together and the second factors together using the associative property of multiplication.

Step 2: Divide the first factors. Then divide the second factors using the Quotient of Powers Law.

Step 3: Rewrite the final answer in scientific notation if necessary.

Dividing Numbers in Scientific Notation (1:23)

Example:

$$\frac{6\ x\ 10^{4}}{3\ x\ 10^{2}}$$

Practice 1. $\frac{1.76\ x\ 10^{-14}}{1.3\ x\ 10^{12}}$ 2. $\frac{4.52\ x\ 10^{18}}{2.83\ x\ 10^{13}}$ 3. $\frac{7.6\ x\ 10^{0}}{5.4\ x\ 10^{-6}}$ 4. $\frac{3.89\ x\ 10^{25}}{1.72\ x\ 10^{25}}$	**Practice Dividing Numbers in Scientific Notation (5:16)**
How many….Making Comparisons **Times larger we divide** How many times larger is $4\ x\ 10^{18}$ than 2 x 10^{8} **Times smaller we divide** How many times smaller is 6 x 10^{-5} than 3 x 10^{-3}	**Making Comparisons (5:09)**

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1. How many times larger is 6 x 10^{9} than 2 x 10^{5}? 2. How many times smaller is 5 x 10^{-5} than 2.5 x 10^{-3}?	